REMARKS

This paper is filed in response to the Office Action mailed May 12, 2006. Claims 1-7, 9-18 and 20-38 remain in this application with new claims 39-41 having been added.

Proper support for the new claims 39-41 find support in previously presented claim 1 and paragraphs [0083] to [0100].

Claims 1, 33, 34, 37 and 38 stand rejected under 35 U.S.C. 102(b) as anticipated by Lynch, U.S. Patent No. 5,038,781. Applicant has carefully studied the reference and believes the presently claimed invention is distinguishable over said reference.

Claim 1 recites:

"An **implantable** nerve stimulation system, comprising:

at least one nerve cuff so configured as to receiving part of a nerve, the nerve cuff having electrodes therein positioned in the vicinity of nerve fibers;

a control unit including:

a power source;

a processor;

at least one signal conditioning circuit so connected to the electrodes of the at least one nerve cuff as to **receive** signals from the nerve fibers;

at least one stimulation circuit so connected to the electrodes of the at least one nerve cuff as to deliver stimulation pulses to the nerve fibers;

wherein the processor is so configured as to a) selectively activate the at least one signal conditioning circuit in order to **detect a physiological event** and b) activate the at least

one stimulation circuit in response to the detection of the physiological event." [Emphasis added]

At page 2 of the Action, Lynch is cited as disclosing a "signal conditioning circuit comprising gates 90-99 and switches 100." Applicant submits that Lynch teaches "Referring again to FIG. 19, AND gates 90-99 are used to gate the respective outputs Q0-9 with the enable signal 86, so that until the enable line 86 is made true, all of the polarity commands are false, leaving all of the electrodes in the open, or floating state. When the enable signal is made true, the polarity commands are applied to the analog switches 100, and the selected transistors are turned on. Then, when the actual stimulation pulse begins, the current is channeled with the desired polarity and to the desired electrodes according to the data just received. At the end of the stimulation pulse, the control circuit 75 is reset to begin accepting data for the next stimulation pulse." (column 12, lines 35-47), thus Lynch teaches that gates 90-99 and switches 100 are used to select the channel the current to the desired electrodes, it does not provide at least one signal conditioning circuit so connected to the electrodes of the at least one nerve cuff as to receive signals from the nerve fibers. Thus, Lynch teaches away from "at least one signal conditioning circuit so connected to the electrodes of the at least one nerve cuff as to receive signals from the nerve fibers"

Also, at page 2 of the Action, it is noted that the Lynch reference states that "receive electrode data state 111 to comprise detecting physiological event and if all data are correctly received." However, Applicant states that Lynch teaches that "When the trailing edge of the second start bit is detected, the control circuit 75 enters a "receive electrode data" state 111. In the "receive electrode data" state 111, pulses are produced on the clock line 85 to clock the electrode polarity command bits into the shift register 76. Upon completion of the polarity command bits, the parity bit and stop bits are checked, as described above, to detect a parity or framing error, respectively. If either such error is detected, the "reset" state 110 is immediately re-entered without activating the enable signal 86. This could occur, for example, if synchronization is lost between the microcircuit 51 and the microcircuit driver 60 resulting in a stimulation pulse being mistaken for an information transmission. In that case, both a parity error

and framing error will be detected, and the cycle will repeat until a valid information transmission is received. In the "receive electrode data" state 111, if all of the data is correctly received, the control circuit 75 enters a "deliver stimulation pulse" state 112 and the enable signal 86 is activated." (column 14, lines 22-42), thus Lynch teaches that the "receive electrode data" to check if data sent to the electrode is correctly received, i.e. detect an error condition in the transmission of data from the control circuit to the electrode, before entering a "deliver stimulation pulse" state 112, not to detect a physiological event. Thus, Lynch teaches away from the processor is so configured as to a) selectively activate the at least one signal conditioning circuit in order to detect a physiological event.

The Applicant therefore submits that independent claim 1 is not anticipated by Lynch nor are claims 33, 34, 37 and 38 which are directly or indirectly dependent on claim 1.

Claims 1-5, 9-18, 22-30, 35 and 36 are further rejected under 35 U.S.C. 102(6) as being anticipated by Haugland et al., Published Application No. 2003/0144710. Respectfully, the Applicant disagrees with this rejection and provides the following distinguishing comments in support of the rejected claims.

The Haugland et al. reference is cited as disclosing a nerve stimulation system as shown in Fig. 12. Applicant submits that the Haugland reference teaches a system of which only the amplifier 114 and the electrodes 113 are implanted, as evidenced in paragraphs [0128] and [0129] where the processor 110 is described as a personal computer and in particular the end of paragraph [0129] which states that "subsequent implementation would be miniaturized by incorporating the receiving and filtering means, the computing means as well as the stimulator in a small and lightweight apparatus which can be easily carried attached for example to the upper leg of a patient or carried in a belt." Thus, Haugland et al. teaches away from an implantable nerve stimulation system.

In view of the aforesaid, it is submitted that claim 1 is not anticipated by the Haugland reference nor are claims 2-5, 9-18, 22-30, 35 and 36 which are either directly or indirectly dependent from claim 1.

New claim 39 recites:

"An **implantable** nerve stimulation system, comprising:

at least one nerve cuff so configured as to receiving part of a nerve, the nerve cuff having electrodes therein positioned in the vicinity of nerve fibers;

a control unit including:

a power source;

a processor;

at least one signal conditioning circuit so connected to the electrodes of the at least one nerve cuff as to receive signals from the nerve fibers;

at least one stimulation circuit so connected to the electrodes of the at least one nerve cuff as to deliver stimulation pulses to the nerve fibers;

wherein the processor is so configured as to a) selectively activate the at least one signal conditioning circuit, b) analyse the signals received by the at least one signal conditioning circuit so as to detect either a positive ramp having a duration between a first and a second values and a peak-to-baseline difference greater than a first threshold value or a negative ramp having a duration between a third and a fourth values and a peak-to-baseline difference greater than a second threshold value and c) activate the at least one stimulation circuit in response to the detection of either the positive ramp having a duration between the first and the second values and a peak-to-baseline difference greater than the first threshold value or the negative ramp having a duration between the third and the fourth values and a peak-to-baseline difference greater than the second threshold value." [Emphasis added]

The Applicant reiterates the arguments of claim 1 in support of this newly presented claim. Furthermore, it is noted that Haugland et al. suggests the use of an adaptive logic network applied to a peroneal nerve signal and comparing a target signal with obtained from force sensitive resistors placed under the foot at the heel, and at the medial and lateral metatarsals (paragraphs [0131] and [0132]). Thus, it can be interpreted that the Haugland reference teaches away from the processor being so configured as to analyse the signals received by the at least one signal conditioning circuit so as to detect either a positive ramp having a duration between a first and a second values and a peak-to-baseline difference greater than a first threshold value or a negative ramp having a duration between a third and a fourth values and a peak-to-baseline difference greater than a second threshold value and c) activate the at least one stimulation circuit in response to the detection of either a positive ramp having a duration between the first and the second values and a peak-to-baseline difference greater than the first threshold value or a negative ramp having a duration between the third and the fourth values and a peak-to-baseline difference greater than the second threshold value.

Applicant also asserts that in dependent claim 39 and dependent claims 40 and 41 are not anticipated by Lynch, Andrews or Haugland et al.

In view of the aforesaid, Applicant respectfully requests favorable reconsideration of the claimed invention.

Respectfully Submitted,

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